COUNCIL REPORT

To: Mayor and Council Date: February 13, 2024

From: Trevor Seibel, Deputy CAO

Subject: **Fleet Emissions Road Map**

Report prepared by: Stacey Harding, Operations & Projects Manager

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RECOMMENDATION to Consider and Resolve:

THAT Council approve the CleanBC three stage electrification strategy as outline in the report from the Operations & Project Manager dated February 13, 2024;

AND THAT CleanBC three stage electrification strategy be subject to annual capital budget approvals.

STRATEGIC AREA(S) OF FOCUS

Invest in Infrastructure – We will invest in building, improving, and maintaining infrastructure to meet the needs of, and to provide a high quality of life for, current and future generations.

BACKGROUND

Council has expressed a strong commitment to reduce the City's impact on the environment by decreasing our greenhouse gas emissions. In 2007, the City was a cosignatory on the BC Climate Action Plan. In 2021, Council endorsed the Emissions Reduction Policy that applies to the City's fleet and equipment. In late 2023, a Corporate Climate Action Plan (CCAP) was presented to Council. The draft plan provided high-level strategies to facilitate emissions reductions. During these presentations, staff advised that further ground level real time reports would be presented with specific action items for Councils endorsement. These action items would achieve the agreed to targets.

Attached to this report is the Fleet Energy Assessment (FEA) report containing direct scheduled action items, projects, and funding strategies to meet these goals.

The following shows the three phases of the fleet electrification program:

1. Facility electrical modifications and service upgrades.
2. Level two charging station installations.
3. Electric Vehicles (EV's) delivered and ready for service.

Each phase has an individual rebate program through CleanBC. To qualify for the rebate program requires Council to endorse the road map strategy.

This report will summarize the FEA road map towards reducing emissions associated with our fleet, along with an implementation schedule.

An objective of this report is to determine if the road map aligns with the emission reduction goals of Council, specifically the fleet conversion schedule. Council could choose to compress the timeline to accelerate our fleet emission reductions to comply with the emissions reduction corporate plan and the provinces strategy. Newer units cycled out before their end of life would hold a higher resale value and change the financial model should council choose this more aggressive conversion plan to reach higher emission targets.

Fleet Emission Reduction Options

Staff and Council have had meaningful discussions on options and potential opportunities to reduce fleet emissions. These have included:

Hydrogen Fuel Cell Electric (FCEV) Vehicles

Hydrogen is a prospective fuel source. It works by capturing energy through a chemical reaction involving hydrogen and oxygen. Currently, hydrogen vehicles are limited and largely unavailable. Kelowna hosts the only local hydrogen fueling station.

Heavy-duty FCEV and EV vehicles, however advancing, are currently underdeveloped and unattainable. When the time comes that both are viable options for fleets, FCEV might have advanced as the preferred option. FCEV will lessen the dependency and pressures on the electrical grid.

Propane

Propane is an available fuel source. It does, however, still produce tail pipe emissions. The conversion kits are expensive, and the tanks are intrusive. Propane engines are less powerful and are largely fading as a preferred option as other technologies emerge.

Renewable Natural Gas (RNG)

Staff have been involved in extensive discussions with Fortis BC Energy with respect to an RNG program. These discussions have focused on a RNG fill stations (fast and slow), utilizing our converted CWK fleet and finding partner organizations to use it. To date we can report the following:

- A roadside location was identified next to the new Operations Yard on Stevens.
- The price point per liter is higher than what we pay now for gasoline and diesel.
- The conversion kits are cost prohibitive approximately $30,000 per pick up.
- Purchasing new units (small to mid-size) that are factory equipped are substantially more expensive.
- Mid to large size units are largely unavailable and if so, at a much higher price point.
- Despite best efforts to secure a partner fill station co-user, one has not been secured. We have reached out to BC Transit, SD#23, courier companies, E360 and others with no success. Without such a partner the fill station is not viable.
- The economic benefits to the CWK fleet has not been realized with a CNG program to date.

Diesel Fuel Emission Reducing Additives

Staff have researched several of these products. Despite claims these products offer some reductions, they are expensive and inconvenient to use. This inconvenience is justifiable if the amount of emissions reduction is significant and at a reasonable cost, both of which they appear not too. The newer style highly efficient diesel motors the city operates and the quality additive enriched fuel we purchase combine for a highly efficient motor with much lower emissions than the older style diesel engines. Fleet is not opposed to trialing this; however measurable emission results would be difficult to determine. Staff will continue to follow these emerging products.

Hybrid Vehicle (HEV)

These are defined as vehicles that rely on internal combustion engines and an internally charged battery to operate. They are available in small to half ton vehicles. Currently, the City has several in the fleet and is proposing more in the future. Hybrid vehicles do not qualify for rebates, however through fuel tracking we have measurables to calculate fuel reduction and cost savings.

Plug-in Hybrid Electric Vehicle (PHEV)

PHEV uses internal combustion and electricity to operate. PHEVs qualify for rebates up to $7,500.00. Plug in hybrid units are limited in selection but more are coming on stream. The City's fleet has one PHEV, and it outperforms our standard hybrid vehicle with respect to emission reductions.

Electric Vehicle (EV)

EVs are available in cars, SUV's and half ton truck models. EV's qualify for rebates up to $7,500.00. This technology is progressing fast with newer longer lifespan batteries on the horizon.

Further in this report, Council will see an EV and PHEV implementation schedule for the City's fleet that supports the City's emission reduction goals and provincial requirements for municipal fleet conversion.

The 10 Year Road Map to meet our target objectives:

YEAR	2024	2025	2026	2027	2028	2029	2030
Number of Units to Convert	2	7	6	2	1	3	8
Estimated Recovery	$13,000	$60,000	$44,875	Financial estimates cannot be predicted this far ahead.			
Estimated Cost to Replace	$165,000	$490,000	$430,000				

Note: *The estimated recovery amounts are based on 2024 vehicle resale values. The larger number of replacements in years 2025/26/30 are what we predict will need replacing regardless of the conversion plan, based on the current replacement policy.*

This conversion road map will see the current City's fleet of 87 exceed the Emission Reduction Policy's target in 2030 of 30% of units (29 vehicles). We will be at 33.33%.

Note: *This does not mean that all the vehicles are EV's, but just that the fossil fuel emission reduction targets will have been met.*

Influencers to the conversion process:

- Council will remain in control of the conversion process with each year's purchases reviewed during annual budget deliberations.
- Council can decrease or increase the conversion rate based on available budget or desire to advance emission targets.
- Staffs existing Acquisition and Replacement Policy will still apply although the scoring process may need to change in the future to suit new technologies.
- 160km or 12 years in age triggers the scoring process. As exists today, if the vehicle is in good condition, we may choose to keep it. However, if expensive major repairs are foreseen such as a transmission or EV battery replacement the unit may be cycled out early. The policy is our benchmark.

Caveats

1. The vehicles identified in this report represent current existing vehicles. Additionally, this list does not include new or replacement vehicles larger than a half ton truck, heavy or specialized equipment.
2. Industry availability is improving, emerging technologies continue and there are advances in fuel choices, this may have effects on future emission reduction choices.

Right Sizing

The fleet department uses a “Right Sizing” process to determine the requirements of new vehicle requests, with the intention of purchasing based on needs and to reduce our emissions. This process involves collecting requirements such as box size, towing and power requirements, cargo needs and required seating. Assessing the information gathered eliminates purchasing oversized, overpowered, and inappropriate vehicles. With every new purchase, selecting the most environmentally friendly option is paramount.

FLEET AND EV INFRASTRUCTURE

After extensive research, it’s been concluded that currently, EV’s and PHEVs are the most viable option for our fleet with respect to emission reductions at this time.

Two phases can be completed in advance of the EV fleet conversion including:

1) upgrading facility electrical infrastructure for required electrical needs and

2) installing charging stations.

Both steps are subject to offsetting rebates.

Other rebates may be available. The consultation team will make all applications on behalf of the City. Pre-approval for the facility modifications has already been submitted should the City’s program get Council endorsement and move forward.

Funding the City’s portion is referenced in the Financial Impacts portion of this report. Staff recommendation is we move forward on the facility modifications to support EV charging station infrastructure at:

- Mount Boucherie Facility
- City Hall
- Operations Yard
- Powers Creek Treatment Plant
- Fire House #30

Feasibility for the Museum and RCMP buildings requires future research.

CHARGING STATION TYPES

There are three types of EV charge stations:

Level I – 110V slow charge stations most used for homes and some workplaces. The chargers are typically included with your EV purchase.

Level II – 240V used in commercial, workplace and fleet charging settings. The data network in the charging station recognizes a user’s phone app for applying charging fees

and recording power usage. This is critical data for submitting statistics for carbon credits and tracking energy usage. Costs can vary for these units, a commercial unit with data is approximately $5,000.00 (before rebates). The costs for different types of level II chargers varies, if they are public stations vs fleet or it they are double chargers vs singles. These varied costs are referenced in the finance table which explains the different costs per facility.

Level III – These chargers are typically in urban areas for public use or are along main travel routes. BC Hydro is currently establishing a network around BC and considering an additional level III station in West Kelowna. Costs for these units can exceed $100,000. However, BC Hybro will fund these charging stations if they support them.

FINANCIAL IMPLICATIONS

The costs for the vehicle replacement units intended for electric conversion will be presented during the annual budget deliberation process. Available rebates will be applied for in the year they are approved for replacement.

The cost of both the facility electrical modifications and service upgrades as well as the level two chargers was presented during the budget deliberations as part of C2024-41 Emission Reduction Projects (LGCAP) and approved by Council. Funding for C2024-41 is from the Local Government Climate Action Program funding ($500,000) and the Capital reserve ($114,000) for a total of available funding source of $614,000. Any amounts remaining will be used for other projects. The rebates applied for and are in addition to the climate action grant funding we have received.

Charging Infrastructure Estimated Costs in 2024

	Number for Charging Ports	EV READY (ELECTRICAL MODIFICATIONS)	Clean BC Rebate	CHARGING INFRASTRUCTURE	Clean BC Rebate	Total Cost to CWK
Mt. Boucherie	7	$ 109,200	- 20,000	$ 80,295.60	- 35,000	$ 134,496
City Hall	12	65,100	- 20,000	82,589	- 50,000	77,689
Operations Centre	9	73,619	- 20,000	71,518	- 45,000	80,137
Water Treatment Plants	1	14,700	- 4,851	13,821	- 5,000	18,670
Firehouse	1	-	-	9,815		9,815
		$ 262,619	-$ 64,851	$ 258,038	-$ 135,000	$ 320,806
15% Electrical Engineer Consultant Costs		39,393		38,706		78,099
20% Contingency		52,524		51,608		104,131
		$ 354,536	-$ 64,851	$ 348,352	-$ 135,000	$ 503,036
RCMP & Museum **requires more research so not included at this time	3	66,500		25,330		91,830

NOTES

1. True costs to be determined through the request for quotation process.
2. Cost estimates are before tax.
3. Maximum of four buildings are permitted in the rebate application.

COUNCIL REPORT / RESOLUTION HISTORY

Date	Report Topic / Resolution	Resolution No.
November 9, 2021	It was moved and seconded **THAT** Council adopt the Vehicle and Equipment Emission Reduction Policy dated November 9, 2021; and **THAT** Council approve of staff applying for all applicable rebates to support the Vehicle Emission Reduction initiative. It was moved and seconded **THAT** Council defer adoption of the Vehicle and Equipment Emission Reduction Policy dated November 9, 2021 for a period of one month. CARRIED; Mayor Milsom and Councillor Zilkie opposed	C336/21 C337/21
December 14, 2021	*This item was considered at the November 9, 2021 Council meeting where Council moved and seconded the motion. Following discussion on the matter, Council resolved to defer adoption of the policy for a period of one month. As this item has been moved and seconded it was now before Council for consideration of adoption.* **THAT** Council adopt the Emission Reduction Policy as revised dated December 14th, 2021; and **THAT** Council approve of staff applying for all applicable rebates to support the vehicle emission reduction initiative. CARRIED UNANIMOUSLY	C336/21
December 12, 2023	It was moved and seconded **THAT** Council endorse the City of West Kelowna Corporate Climate Action Plan. CARRIED UNANIMOUSLY	C413/23

Alternate Recommendation to Consider and Resolve:

THAT Council direct staff to come back with another plan to either speed up the conversion or increase the number of fleet vehicles being converted.

REVIEWED BY

Allen Fillion, Engineering & Operations Director

Lisa Siavashi, Finance Manager

Corinne Boback, Legislative Services Manager / Corporate Officer

APPROVED FOR THE AGENDA BY

Trevor Seibel, Deputy CAO

Powerpoint: Yes ☒ No ☐

Attachments: 1. CWK Fleet Energy Assessment.